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published in
Journal of Abnormal Child Psychology
1999

DOI (link to publisher)
10.1023/B:JACP.0000039775.83318.57

document version
Publisher's PDF, also known as Version of record

Journal of Abnormal Child Psychology, Vol. 27, No. 4, 1999, pp. 261–276

Boys Who Join Gangs: A Prospective Study of Predictors of First Gang Entry

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Received February 12, 1998; revision received November 30, 1998; accepted January 19, 1999

In a representative sample of boys who were in the 7th grade of an urban public school system at the start of a 6-year longitudinal study, more African American boys (23.8%) than non-Hispanic White boys (3.9%) had entered an antisocial gang by age 19. There were too few White gang members to study, but among African American boys, first gang entry was predicted prospectively by both baseline conduct disorder (CD) behaviors and increasing levels of CD behaviors prior to gang entry. This suggests that gang entry may be a further developmental step for some boys who are already on a trajectory of worsening antisocial behavior. Having friends prior to gang entry who engaged in aggressive delinquency increased the risk of gang entry further, but only during early adolescence. Family income and parental supervision also independently predicted gang entry, but the direction of their influences depended on the youth's age.

KEY WORDS: Gangs; antisocial behavior; conduct disorder; ethnicity.

Membership in antisocial youth gangs has grown rapidly in the United States, with current estimates suggesting that more than 650,000 youths are members of gangs (Howell, 1998). These numbers are important because membership in antisocial youth gangs represents a significant public health problem in the United States. Membership in gangs is associated with markedly increased rates of antisocial behavior that not only harms victims but also exposes gang members to risk of injury, incarceration, and death (Esbensen & Huizinga, 1993; Fagan, 1990; Hammond & Yung, 1993; Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993).

Which youths are most likely to join gangs? The answer to this question is of both theoretical and practical importance. If reliable early predictors of gang entry can be identified, it may be possible to reduce rates of gang membership through focused prevention efforts. If such prevention efforts were successful, it might be possible to decrease both juvenile crime rates and risk of harm to gang members.

Two major competing models have been proposed to explain gang entry. *Selection theories* suggest that some youths join gangs because "birds of a feather flock together." That is, youths who already engage in antisocial behavior are hypothesized to be more likely to join together in gangs (Spergel, 1990; Staub, 1996). In contrast, *socialization theories* suggest that youths who join gangs are socialized into antisocial behavior during or after gang entry (Winfree, Backstrom, & Mays, 1994). For example, nonantisocial youths may join gangs for reasons of self-esteem, power, and protection, but are encouraged to participate in antisocial behavior by the group after joining. These two theories are not completely incompatible, as selection processes could explain gang entry, but being a member of a gang could further enhance antisocial behavior through social processes (Thornberry *et al.*, 1993).

Findings from a number of cross-sectional studies are relevant to these theories of gang entry. Gang membership

This manuscript was received and initially reviewed under the editorship of Donald K. Routh.

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0091-0627/99/0800-0261$16.00/0

is more common in neighborhoods in which gangs operate and neighborhoods with high crime rates and high availability of drugs (Curry & Spergel, 1992; Fagan, 1996). Gang members are more likely to come from lower socioeconomic status and single-parent families that provide harsh discipline and inadequate supervision (Winfree *et al.*, 1994), and they are more likely to have delinquent friends and to attend schools with members of gangs (Curry & Spergel, 1992; Winfree *et al.*, 1994). Although a substantial literature confirms this description of gang members (Thornberry, 1998), cross-sectional studies do not allow tests of competing theories of gang entry, as it is possible that some of the differences between gang members and nonmembers arose after the members entered gangs.

The most informative tests of theories of gang entry use prospective designs that provide information on youths prior to gang entry. In the Denver Youth Study (DYS; Esbensen & Huizinga, 1993; Esbensen, Huizinga, & Weiher, 1993) youths from high-crime neighborhoods who were 7–15 years of age at the time of Wave 1 were interviewed in a prospective design over four annual waves. Following Spergel (1990), gang membership was defined in the DYS on the basis of self-reported membership in a gang that was engaged in illegal activities. Although gang members constituted only 7% of the male sample in Wave 4, they committed 57% of all violent offenses, serious thefts, and drug sales reported by male sample members (Esbensen & Huizinga, 1993; Esbensen *et al.*, 1993). Among boys in the DYS, future gang members displayed increasingly greater severity of antisocial behavior and substance use over the years prior to gang entry. Girls who joined gangs did not show significantly higher rates of antisocial behavior prior to gang entry than girls who did not join gangs during the study, but the numbers of girls who joined gangs may have been too small to detect differences.

In the Rochester Youth Development Study (RYDS; Thornberry *et al.*, 1993), youths from mostly high-crime neighborhoods who were in the 7th or 8th grade in public schools during the first wave were interviewed at 6-month intervals. Analyses of gang membership were limited to boys due to the small number of female gang members. Unlike the DYS, the definition of gangs in the RYDS was not limited to groups that were involved in antisocial behavior, but was defined on the basis of youth reports of membership in a "gang" or "posse." In the RYDS, the 26% of boys who were a members of a gang during at least one 12-month period committed 80% of all violent crimes, 90% of all serious delinquent acts, and 73% of all drug sales reported by boys (Thornberry, 1998). In an early report from the RYDS covering 3 1/2 years of data collection (Thornberry *et al.*, 1993), no differences in antisocial behavior prior to entering a gang were found between future gang members and youths who never entered a gang. In a later report that covered 4 1/2 years and used different analytic methods, however, the youth's level of antisocial behavior in the years prior to gang entry did predict future gang entry (Thornberry, 1998). Other prospective predictors of gang entry included association with delinquent peers, low parental supervision, and availability of drugs (Thornberry, 1998).

The Seattle Social Development Project (SSDP; Hill, Howell, & Hawkins, 1996) similarly followed 800 youths from middle school into early adulthood. In the SSDP, youths who joined gangs were more likely to be of African American heritage than non-Hispanic White, were disproportionately from neighborhoods with high availability of drugs, and were from families with high numbers of changes in family structure and with family management problems. In addition, displaying more antisocial behavior and hyperactivity and associating with delinquent peers prior to gang entry predicted future gang membership.

Thus, the results of these three prospective studies are consistent with selection theories of gang entry, as the antisocial behavior of youths prior to gang membership was a significant predictor of subsequent gang entry. On the other hand, a number of peer, family, and neighborhood factors were also identified as significant predictors of future gang entry, raising the possibility that contextual factors may also promote gang entry. The present article presents analyses of data from the longitudinal Pittsburgh Youth Study (PYS; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998). The goal of the present analyses is to attempt to replicate earlier findings that future gang entry is predicted by both the youth's antisocial behavior prior to gang entry and family and neighborhood characteristics. We have analyzed these data in ways that address several weaknesses in previous longitudinal studies of gang entry. First, like all previous prospective studies, the PYS data are both "left truncated" (because none of the studies began early enough in childhood to antedate the beginning of the risk period for gang entry) and "right censored" (because they did not extend past the close of the risk period). Unlike previous studies, however, we use event history analysis to compensate for these factors. Second, like some previous studies, we examine the potential role of several contextual factors (peer, family, and neighborhood variables) in predicting gang entry, but unlike previous studies, we examine the role of these contextual factors while controlling for the youth's antisocial behavior prior to gang entry to determine if they are independent predictors.

Third, the way in which gang membership was defined in previous prospective studies may have biased findings. In each study, gang membership in a given wave

was based on reported gang membership during that wave only. Therefore, youths who were classified as non-gang members in the first wave may have been gang members prior to the first wave. If gang members retain some of their characteristics after leaving a gang, classifying prior gang members as not being gang members could misrepresent group differences. In the current study, we limit our analyses to first gang entries. We do this both retrospectively, by excluding youths who reported they had been a member of a gang prior to the first wave, and prospectively, by limiting our event history analyses to first gang entry. Thus, we avoid the confound of allowing prior gang members in the nongang group in each wave.

METHOD

Sample

The sample consists of 347 boys (204 African American and 143 White) from the PYS (see Loeber *et al.*, 1998 for a detailed description of the PYS). The PYS has been following three samples that are representative of all boys who were enrolled in the 1st, 4th, or 7th grades in public schools in Pittsburgh, Pennsylvania in 1987–1988. The current study used data on the second cohort of the 7th-grade sample. This sample was selected because they have progressed furthest through the risk period of gang entry, but the first cohort of the 7th-grade sample was not used because their gang questionnaire did not ask about ever being a member of a gang prior to the first wave of data collection. Nearly all of the boys in the second 7th-grade cohort were ages 12 through 14 at the initial (Wave S) interview (37% age 12, 40% age 13, 21% age 14), with the remaining few boys being age 11 or 15. At the latest available interview point (the 10th wave), all boys ranged in age from 18 to 21. Initially, about 85% of boys agreed to participate in the study, with participant retention being above 80% in each follow-up wave.

The PYS was selected to provide a sufficient sample of boys who engage in serious antisocial behavior while maintaining a comparison group of non-antisocial boys. Boys were divided into two groups thought to be at high and low risk for offending on the basis of the screening assessment. The risk score was constructed from ratings of delinquent behaviors obtained from parents, teachers, and the boys in the screening interview. High-risk participants were those who scored above the 67th percentile for their grade on the resulting composite risk score, with the remainder being classified as low risk. Of about 850 boys screened in each grade, the 250 boys with the highest risk scores and a random sample of 250 low-risk boys were selected. Of the 347 boys in the second cohort of the 7th-grade sample, 181 (52%) were from the high-risk group and 166 (48%) were from the low-risk group. To avoid biases due to oversampling high-risk youths, all statistics (other than fractions describing the sample composition in this section) were weighted using the inverse of the boy's probability of selection into the sample.

As expected for an urban public school sample, the boys' families had relatively limited economic resources. The median family income at the first interview (in 1996 dollars) was $16,579. The majority (59%) of primary caregivers in the study had completed high school, but had received no further education by the time of the first interview. Twenty percent of primary caregivers had not completed high school, and 21% had attended schooling beyond high school. At the time of the first interview, 49% of the boys lived in single-parent families, 29% lived with both biological parents, and 22% lived with one biological parent and one nonbiological parent figure.

Statistical Approach

Event history analyses model the likelihood of the occurrence of an event such as gang entry over time (in this case, the youth's age) among persons at risk for that event. Cox proportional hazards models (Cox, 1972; Kalbfleisch & Prentice, 1980; Yamaguchi, 1991) are a widely used type of event history analysis. This approach assumes that the likelihood (or hazard) of an event occurring in each time interval is a function of various time-constant (e.g., ethnicity, gender) and time-varying covariates (e.g., parents' marital status). Because Cox models are semiparametric, changes over increasing age in the likelihood of gang entry are measured without requiring the form of this age-hazard relationship to be specified. Coefficients for covariates are assumed to remain constant as age increases, however. Fortunately, as addressed below, there are ways to test this assumption.

Coefficients from the Cox model are interpreted in a manner similar to coefficients in ordinary least-squares regression analysis. The hazard ratio for a one unit change in a covariate, while holding constant the other covariates and time, is the exponential of the estimated coefficient. For dummy variables, the exponential of the coefficient is the amount by which the hazard for the persons characterized by 1 on the dummy variable differs from the hazard for persons characterized by 0 on the dummy variable. Hazard ratios greater than 1 represent greater likelihood of the event at higher levels of the covariate; hazard ratios less than 1 indicate lower likelihood of the event at higher levels of the covariate. Along with these coefficients, we

also present two chi-square statistics (Wald and likelihood ratio) for the model that test whether at least one of the covariate coefficients in the model differs from zero to look for convergence in results across these tests of the significance of the models.

Unlike an event such as divorce, for which time of entry into the risk set is observable (i.e., the time of marriage), the earliest age at which a boy moves from a zero to a nonzero risk for gang membership is not observable. However, as is typical in event history analyses, we use the earliest reported age of actual gang entry by any boy to approximate the earliest risk for gang entry. In our data, the earliest retrospectively reported age of membership in a serious gang was 9 years. Because our first data collection point follows the earliest age of risk of gang membership by several years, the covariates collected throughout the longitudinal study are missing for the earliest time periods at which the boy is at risk (that is, many covariates are left truncated). A further complication is the exit (and sometimes reentry) of boys from the study. That is, although most boys in our sample were interviewed at either all 10 (68%) or at 9 of the 10 (13%) waves, some boys were not interviewed at multiple waves.

The Cox proportional hazards model we applied allows for our late initial observation of participants, for participants with missing data at particular interviews, for participants being right censored by their final interview (see Guo, 1993), and for the application of sampling weights (see Binder, 1992). As an extension of standard approaches to dealing with left truncation and right censoring, these Cox models use full information about each time period for which data are available on a participant. Thus, in bivariate and multivariate models, we focused on the portion of the risk period coincident with the prospective portion of the study and can draw on the full set of covariates collected at each interview. When estimating the survival function and overall prevalence of gang entry, however, we drew on both retrospective and prospective information about the entire risk period, because left truncation of covariates is not an issue for these descriptive models.

Data Collection Waves

As shown in Table I, data were collected during 10 prospective waves. The first wave was the initial screening assessment (Wave S), with the final wave (Wave M) being conducted 6 1/2 years following the screening assessment. Data on gang entry from all data collection waves in which questions about gangs were asked were used to comprehensively identify the timing of first gang entry, but in order to analyze data on a constant annual basis throughout the period of data collection, potential predictor variables from Waves B and D were not used.

Table I. Timing of Data-Collection Waves and Assessments of Covariates That May Predict Gang Entry

	Data-collection waves									
	S	A	B	C	D	E	G	I	K	M
Months since screening	0	6	12	18	24	30	42	54	66	78
Race–ethnicity	X									
Initial CD behaviors	X									
Change in CD behaviors		X		X		X	X	X	X[a]	
Peer delinquency		X		X		X	X	X	X	
Self-reported delinquency		X		X		X	X	X	X	
Household measures		X		X		X	X	X	X[b]	
Parental supervision		X		X		X	X	X	X[b]	
Neighborhood crime		X		X		X	X	X	X[b]	

Note. Planned semiannual Waves F, H, J, and L were omitted for budgetary reasons. In prospective analyses, we examined gang entries that occurred during six annual time periods (between Waves A & C, C & E, E & G, G & I, I & K, & K & M). The temporally prior time-varying predictors of gang entry during these six successive 12-month periods were measured in Waves A, C, E, G, I, and K, respectively.

[a]The composite parent–teacher–youth score was estimated using the youth's report alone in Wave K because parents and teachers were not interviewed in Wave K; [b]During Wave K, measures from Wave I were used because parents were not interviewed in Wave K.

MEASURES

Assessment of Gang Membership

Data were collected about gang membership for the first time in Wave D (Spring 1990), 2 years after the baseline interview (Wave S). During Wave D, boys in the second cohort of the 7th-grade sample were asked if they were currently, or had ever been, a member of a gang using essentially the same questions used by Esbensen and Huizinga (1993). Formal psychometric studies of these questions have not been conducted, but their validity is supported by findings that self-reported gang members also report engaging in greatly disproportionate numbers of serious crimes (Esbensen & Huizinga, 1993; Thornberry, 1998). Follow-up questions collected information about the boy's age of entry, duration of gang membership(s), and information on the activities of the gang(s). During Waves E, G, I, K, and M, the boys were asked about membership in gangs since the last interview. For each reported gang involvement, follow-up questions asked about the gang's activities and the timing of the boy's entry into and exit from the gang(s).

In order to be certain that gang entry followed the assessment of potential predictor variables, we used information about age of entry and duration of membership in each gang to estimate the month in which a boy first entered a gang. At the first data collection point, the age of entry into each gang was recorded in years. To assure that gang entry occurred after other measured covariates, the date of gang entry was conservatively assumed to be the first month the boy turned that age. At the second data collection point for information on gang entry (Wave E), the study participant was asked only whether he was in a gang during the past 6 months (that is, since the last data collection). For this second time point, the age of entry was conservatively assumed to be the month after the prior interview (about 5 months ago). In the remaining four interviews, the number of months gang members had been a member of each reported gang was recorded, and youths who were no longer a member of a gang were asked how many months previously they had left the gang. For these waves, age of entry was calculated as follows: (a) for boys currently in the gang, the duration of gang membership was subtracted from the boy's age in months at the interview, and (b) for boys not currently in the gang, the duration of gang membership was subtracted from the boy's age in months at the interview minus the number of months since he had left the gang. The initial age of gang entry was identified as the minimum of all gang entry dates reported across these six data collection points.

We applied this method of estimating age of first gang entry using two definitions of gang membership: (a) membership in any gang, regardless of whether the gang members engaged in antisocial activities, and (b) membership in a serious gang, defined following Esbensen and Huizinga (1993) as membership in a gang whose members engaged in at least one antisocial behavior (e.g., fighting with other gangs, drug sales, robbery, stealing, automobile theft, or homicide).

Individual, Peer, Family, and Neighborhood Covariates

The waves during which each time-constant and time-varying covariate was assessed are summarized in Table I. Detailed definitions of each variable are available from the authors on request.

Time-Constant Covariates. We used two time-constant covariates in the current study: (a) the boy's race–ethnicity (coded African American = 1, non-Hispanic White = 0), and (b) a composite of ratings by parents, teachers, and the boys on 10 CD behaviors (bullying, fighting, lying, cruelty to animals, attacking people, running away from home, firesetting, theft, truancy, and vandalism) drawn from the reliable and valid Child Behavior Checklist (CBCL), Teacher's Report Form (TRF), and Youth Self-Report (YSR; Achenbach, 1991a, 1991b, 1991c) obtained during the baseline assessment (Wave S). Information from the three informants was combined at the item level, with each item given the highest rating endorsed by any of the informants.

Time-Varying Covariates. We required that all time-varying covariates be measured prior to first gang entry to ensure temporal precedence. For this reason, we dropped 24 youths from our multivariate analyses who reported membership in any gang that began during or before Wave A. In addition, we dropped cases with missing data for any of the covariates in any wave, except for peer delinquency (deleting 11 serious gang members). These restrictions reduced the sample size for analyses of predictors of gang entry to 320 boys (183 African American and 137 White), 27 of whom had entered a serious gang between the month after Wave A and the end of the study (25 African American and 2 White boys). To examine the potential effects of the loss of cases with missing data in specific waves, we imputed the value of covariates for data points that were missing by substituting information available on that covariate in the previous wave with nonmissing data and replicated all analyses using the more complete sample of 34 serious gang entrants. Because the results of all tests of significance were the same when missing data

were imputed or not, only analyses without imputation are reported.

We used three measures of the boy's own and his peers' antisocial behaviors prior to gang entry as time-varying covariates: (a) composite ratings of the youth's CD behaviors derived from the CBCL, TRF, and YSR (as defined above) were obtained in Waves A–K, (b) self-reports of specific types of delinquent behaviors (Waves A–K), and (c) ratings of peer delinquency (Waves A–K). The Self-Reported Delinquency Scale (SRD; Elliot, Huizinga, & Ageton, 1985) was administered to each boy. The SRD has been shown to be reliable and has been validated against official crime records (Huizinga & Elliott, 1986; Farrington, Loeber, Stouthamer-Loeber, & Schmidt, 1996). SRD responses were coded in two alternative ways, using strategies used in prior gang studies: (a) three dimensions of delinquency (crimes against persons, crimes against property, and drug sales) were coded following Thornberry *et al.* (1993), and (b) a four-level hierarchical categorization of delinquent behaviors (street offending, other serious offending, minor offending, and nonoffending) was used following Esbensen and Huizinga (1993). The Peer Delinquency Scale (PDS; Loeber *et al.*, 1998) elicits information about the antisocial behavior of the boys' close friends. The PDS has high internal consistency and has been related to the youth's level of delinquency (Loeber *et al.*, 1998). Following Keenan, Loeber, Zhang, Stouthamer-Loeber, & van Kammen (1995) we defined four types of peer delinquency reported in the prior year: (a) school-related delinquent acts, (b) covert delinquent acts, (c) overt (aggressive) delinquent acts, and (d) drug use.

Measures of family and neighborhood characteristics include household structure, household income, parental supervision, and neighborhood crime (obtained in Waves A–I). Household structure was assessed by questions regarding the presence of biological or other parent figures in the household. Initial models revealed no difference between households composed of two biological parents versus one biological parent and one nonbiological parent figure in their associations with gang entry. Thus, we used a dichotomous variable contrasting two-parent and single-parent households. Total household income was based on the caregiver report of income from all sources during the past 12 months. In order to capture the real value of income across all years, income in each wave was converted to 1996 dollars using the Consumer Price Index. Parental supervision was assessed using the Pittsburgh Youth Study Supervision/Involvement Scale (Loeber *et al.*, 1998). A construct measuring supervision derived from four parent-reported and four youth-reported items were summed to measure the parent(s)' monitoring of the boy's activities. This construct has been shown to have acceptable internal consistency and to be related to delinquent behavior (Loeber *et al.*, 1998). The SRD, the measure of parental supervision, and the reports of household income were all converted to logarithms because of right skewness. In multivariate models, the log of parental supervision was divided by 10 to better equalize the magnitude of coefficients.

Neighborhood crime was assessed using the Neighborhood Scale (Loeber *et al.*, 1998), which is composed of 17 parent-reported items covering neighborhood crime and related neighborhood characteristics (abandoned houses, availability of drugs, racial tension, etc.). The Neighborhood Scale has been shown to have very high internal consistency and to be related to rates of delinquency (Loeber *et al.*, 1998). In initial models, we considered the linear and logged forms of the continuous neighborhood crime measure, as well as dichotomous indicators representing the four quartiles of the sample-specific distribution of neighborhood crime scores and the upper and lower deciles of the sample-specific distribution of neighborhood crime scores. Consistent with other research demonstrating threshold effects of neighborhood measures (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Chase-Lansdale, Gordon, Brooks-Gunn, & Klebanov, 1997; Crane, 1991), we found that a single dichotomous variable contrasting the highest 10% (very high crime) neighborhoods to the lower 90% (low or moderate crime) neighborhoods performed best. This dichotomous measure of very high neighborhood crime was used in all models reported here.

Most time-varying covariates were measured during each data collection wave after Wave S. Parents and teachers were not interviewed at the two most recent data collection waves used in the current study (Waves K and M), however, creating missing data for those intervals. Because of our requirement of temporal precedence of covariates, these uniformly missing data are relevant to gang entries occurring during only the last 12 months of data collection. For household structure, household income, neighborhood crime, and poor parental supervision, we substituted the value of the covariate at the last wave in which parents were interviewed (Wave I), thus creating a lag of 2 years rather than 1 year for gang entry during the final year of the study. For the rating of CD behaviors, only the youth was interviewed in Wave K. Therefore, we imputed the composite rating of CD behaviors for Wave K using data from the teacher, parent, and youth in all waves before K and data from the youth in Wave K.

Because the boys were of varying ages during each wave in which data were collected on the potential predictors of gang entry, all data were converted to the same

timeline of the boy's age in months as described above. Age was then modeled nonparametrically in the baseline hazard function of the Cox models, providing estimates of the predictors of serious gang entry controlling for the boys' age.

RESULTS

Survival Analysis of First Gang Entry in the Full Sample

Ninety-five of the boys reported ever entering any gang, either before ($n = 27$) or after the study began ($n = 68$). When gang membership was restricted to serious gangs, whose members were reported by the boy to engage in gang fighting, drug sales, stealing, or homicide, 62 boys had entered a gang (15 first gang entries were reported to have occurred before the study and 47 first gang entries reported during the data-collection period). A survival analysis weighted for the probability of selection estimated that 24% of boys enrolled in Pittsburgh city schools enter any gang, and 16% of these boys enter a serious gang by late adolescence. Most boys reported that their first gang engaged in only one antisocial activity (55% fighting with other gangs, 11% selling drugs, 3% commiting homicide, and 3% stealing cars). An additional 27% of boys reported that their first gang engaged in two or more of these activities. Overall, 13% of African American male members of serious gangs reported that their gang engaged in homicide.

Ethnic Differences in First Gang Entry

Of the 95 boys who had ever entered any gang by late adolescence, 17 were non-Hispanic White and 78 were African American. The ethnic breakdown of the 62 serious gang entrants was 8 White and 54 African American boys. Survival curves by ethnic group for any gang entry and serious gang entry are presented in Figure 1. A comparison of the survival curves revealed a higher likelihood of gang entry among African American boys than White boys for any gang entry (Wald $\chi^2 = 31.13$, $p < .0001$) and serious gang entry (Wald $\chi^2 = 25.38$, $p < .0001$). By age 19, 8% of White boys and 34% of African American boys in the Pittsburgh public-school population had entered any gang. For serious gang entry, 4% of White boys and 24% of African American boys had entered a serious gang by age 19. Although the small age-specific sample size of gang entrants precluded a stable estimation of the shape of the hazard function, the survival curves fall off fairly steadily from mid- to late-adolescence, suggesting a constant likelihood of gang entry throughout much of adolescence (see Figure 1).

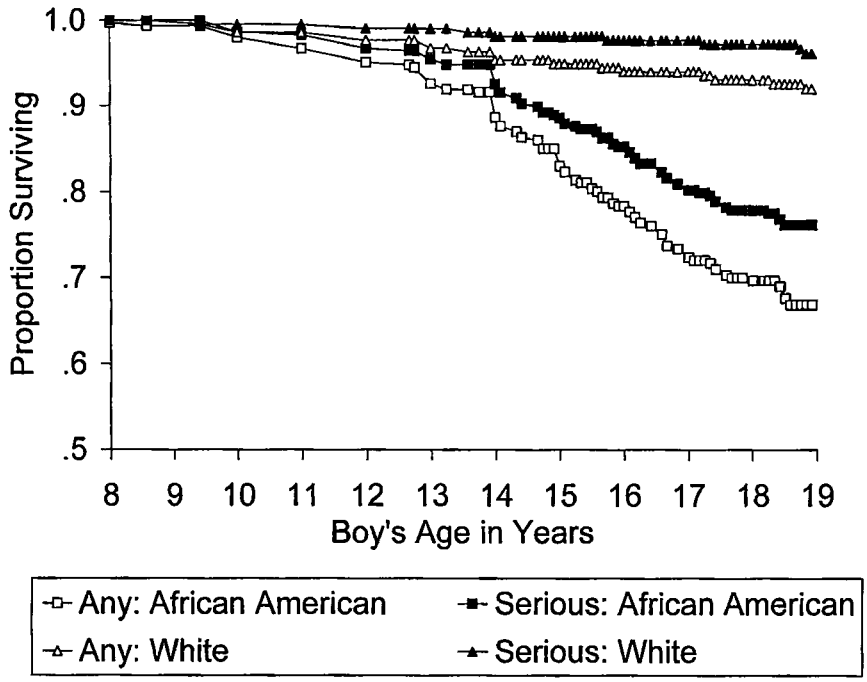

Fig. 1. Survival function for boys' first entry into any gang or into a serious gang from late childhood through late adolescence by race–ethnic group.

Predictors of First Gang Entry Among African American Boys

The remaining multivariate analyses of predictors of first gang entry focused on serious gang entry, but analyses of any gang entry yielded similar findings. Because only two White boys entered a serious gang, these multivariate models of predictors of gang entry are limited to African American boys. Recall that these multivariate models predict only gang entry that occurred during the data-collection period, allowing us to examine the rich set of potential predictors collected throughout the study. Restricting the sample in this way provides a sample of 183 African American boys, 25 of whom reported entering a serious gang by the last wave of data collection.

Boys' and Peers' Antisocial Behavior Prior to Gang Entry. Table II presents the results of Cox models estimating the bivariate relationships between gang entry and the boy's CD behaviors, his self-report of prior delinquent activity, and his rating of his peers' prior delinquency. These models reveal positive associations between prior

Table II. Bivariate Relations of the Boy's and His Peers' CD Behaviors to Later First Serious Gang Entry Among African American Boys

	Likelihood of serious gang entry[a]		
Boy's and peers' prior antisocial behavior	LR χ^2 Wald χ^2	Coefficient (*SE*)	Hazard ratio
Composite rating of boys' CBCL CD behaviors			
CD behavior rating: Baseline	$\chi^2(1) = 7.53^{**}$ $\chi^2(1) = 16.39^{**}$	0.16^{**} (0.04)	1.17
CD behavior rating: Prior year	$\chi^2(1) = 11.94^{**}$ $\chi^2(1) = 20.83^{**}$	0.23^{**} (0.05)	1.25
SRD types of crimes: Prior year			
Log of frequency of crimes against persons	$\chi^2(1) = 11.28^{**}$ $\chi^2(1) = 25.51^{**}$	0.56^{**} (0.11)	1.75
Log of frequency of crimes against property	$\chi^2(1) = 3.92^{*}$ $\chi^2(1) = 6.98^{**}$	0.41^{**} (0.16)	1.51
Log of frequency of selling drugs	$\chi^2(1) = 1.93$ $\chi^2(1) = 5.54^{*}$	0.31^{*} (0.13)	1.36
SRD hierarchical classification: Prior year	$\chi^2(3) = 13.03^{*}$ $\chi^2(3) = 10.98^{*}$		
Street offender vs. nonoffender		2.08^{**} (0.66)	8.03
Serious offender vs. nonoffender		1.80^{**} (0.62)	6.07
Minor offender vs. nonoffender		$1.33^{\dagger}$ (0.72)	3.77
Peer Delinquency Scale: Prior year			
School-related	$\chi^2(1) = 8.38^{*}$ $\chi^2(1) = 9.76^{**}$	0.32^{**} (0.10)	1.38
Covert	$\chi^2(1) = 2.30$ $\chi^2(1) = 5.45^{*}$	0.07^{*} (0.03)	1.07
Overt	$\chi^2(1) = 4.87^{*}$ $\chi^2(1) = 9.15^{**}$	0.21^{**} (0.07)	1.23
Drug use	$\chi^2(1) = 2.04$ $\chi^2(1) = 2.75^{\dagger}$	$0.14^{\dagger}$ (0.08)	1.15

Note. CBCL = Child Behavior Checklist; CD = Conduct disorder; SRD = Self-report of delinquency; LR χ^2 = Likelihood ratio chi-square.

[a] In models using the Peer Delinquency Scale, the number of cases was 182 and the number of serious gang entries was 24; for all other models, the corresponding numbers were 183 and 25.

$^{\dagger}p < .10$. $^{*}p < .05$. $^{**}p < .01$.

problem behaviors and serious gang entry across measures.

In addition to the bivariate analyses, a series of multivariate analyses were conducted to examine the independent contributions of ratings of CD behaviors, self-reported delinquency, and peer delinquency to first gang entry. In the first joint model, CD behaviors both at baseline (hazard ratio [*HR*] = 1.10, $p < .05$) and in each subsequent wave (*HR* = 1.20, $p < .01$) were independent predictors of subsequent gang entry. To better capture change in CD behaviors over time, the time-varying measure of CD behaviors during each wave was next recoded as the amount of change from the rating of CD behaviors in the first wave (Wave S). These multivariate analyses showed that both higher CD behavior ratings at baseline (*HR* = 1.32, $p < .01$) and increases in CD behavior ratings over time (*HR* = 1.20, $p < .01$) independently predicted future gang entry. A multivariate analysis of the three types of self-reported delinquency suggested that only crimes against persons (*HR* = 1.65, $p < .01$) independently predicted gang entry in the following year when the other types of self-reported delinquency were controlled. Similarly, in a multivariate model of the PDS measures, only the school-related dimension of peer delinquency (*HR* = 1.39, $p < .05$) was significantly associated with serious gang entry when the other dimensions of peer delinquency were controlled.

Finally, we examined unique explanatory power for covariates across domains. Peers' school-related delinquency did not significantly predict future gang entry at the $p < .05$ level when the two composite ratings of CD behaviors (baseline ratings and change from baseline) were controlled. When all peer delinquency dimensions of the PDS were combined to create a single score, the total PDS score similarly was not a significant predictor of gang entry once prior CD behaviors were controlled. The set of dichotomous variables indicating the hierarchical classification of levels of SRD delinquency likewise become jointly insignificant. In contrast, the log of SRD crimes against persons remained significant (*HR* = 1.54, $p < .001$) when composite ratings of CD behaviors at baseline and change in CD behaviors over time were controlled. Indeed, SRD crimes against persons remained significant when composite ratings of either aggressive (cruelty to animals; cruelty, bullying, or meanness to others; frequent fighting; and physically attacking people) or nonaggressive CD behaviors in the composite rating were controlled.

Family and Neighborhood Characteristics Prior to Serious Gang Entry. Bivariate and multivariate analyses relating family and neighborhood characteristics to serious gang entry showed that household structure, household income, neighborhood crime, and poor parental supervision were not significantly related to gang entry. To explore potential threshold effects of very low income, we also created dichotomous indicators of family incomes of <$7,000, <$10,000, and <$16,000 per year (at approximately the 10th, 25th, and 50th percentiles for African American families in our sample), which are in the range of the 1996 poverty threshold. None of these dichotomous variables predicted serious gang entry, however.

Combined Models of Behavior Problems and Family Background Prior to Serious Gang Entry. Table III presents models that bring together measures of the youth's prior antisocial behavior and contextual family and neighborhood characteristics. To facilitate comparison, a multivariate model, including the three measures of prior antisocial behavior shown to predict first serious gang entry and a multivariate model of family and neighborhood characteristics, are reported in the first column of Table III. Both Models 1 and 2 include ratings of CD behaviors at baseline, lagged change in ratings of CD behaviors since baseline, and the lagged log of SRD crimes against persons. Each model also includes one or more of the family and neighborhood variables. Across models, the three measures of prior CD behaviors remained significant, with their coefficients changing only slightly in magnitude when family and neighborhood measures were controlled in Models 1 and 2. In contrast, no family or neighborhood characteristic was found to be a significant predictor of first serious gang entry in the combined Models 1 and 2.

Illustration of Relative Risks Associated with the Predictors of Serious Gang Entry. Figure 2 presents the distributions of the boys' CD behavior ratings during baseline for African American boys who did or did not enter a serious gang. Although this graph does not account for right selection, it illustrates the elevated baseline ratings of CD behaviors in early adolescence among African American boys who later entered serious gangs. The distribution of baseline CD behaviors is shifted rightward for future serious gang members, with a much smaller fraction of later serious gang members receiving CD behavior ratings of less than 4. A considerable degree of overlap in the two distributions is also noticeable, however. Some African American boys with low baseline CD behavior scores later entered serious gangs, and some boys with higher baseline CD behavior scores stayed out of serious gangs through late adolescence. To better understand the process of gang entry for these boys, we predicted the hazard scores of gang entry for boys with various combinations of time-varying covariates from our main-effects models and also tested for moderational effects in additional models.

Descriptive statistics are presented in Table IV that compare African American boys who did or did not enter a serious gang by late adolescence on the time-varying

Table III. Multivariate Models Relating the Boys' Prior CD Behaviors and Family and Neighborhood Characteristics to Later First Gang Entry Among African American Boys

	Likelihood of serious gang entry[a]					
	Reference		Model 1		Model 2	
			LR $\chi^2(4) = 20.45^{**}$ W $\chi^2(4) = 39.53^{**}$		LR $\chi^2(4) = 21.18^{**}$ W $\chi^2(7) = 44.82^{**}$	
	Coef. (*SE*)	Hazard ratio	Coef. (*SE*)	Hazard ratio	Coef. (*SE*)	Hazard ratio
Boys' prior antisocial behavior						
CBCL CD behavior rating: Baseline	0.24**	1.27	0.24**	1.27	0.25**	1.28
	(0.05)		(0.06)		(0.06)	
CBCL CD behavior rating: Change from baseline	0.16**	1.17	0.15*	1.17	0.16*	1.17
	(0.06)		(0.06)		(0.06)	
SRD: Log crimes against persons: Prior year	0.43**	1.54	0.44**	1.55	0.41**	1.50
	(0.11)		(0.11)		(0.11)	
Family and neighborhood characteristics						
Single-parent household: Prior year	−0.36	0.70	—	—	−0.42	0.66
	(0.47)				(0.49)	
Log of household income: Prior year	−0.13	0.88	—	—	−0.07	0.94
	(0.29)				(0.33)	
Parental supervision: Prior year	0.13†	1.14	0.01	1.01	0.01	1.01
	(0.08)		(0.08)		(0.08)	
Very high neighborhood crime: Prior year	0.52	1.68	—	—	0.09	1.09
	(0.52)				(0.50)	

Note. LR χ^2 = Likelihood ratio chi-square; W χ^2 = Wald chi-square; Coef. = Coefficient.

[a] In all models, the number of cases is 183, and the number of serious gang entries is 25. In each multivariate model, each potential predictor variable is tested while controlling for all other variables in that model. Dashes indicate that the variable was not included in that multivariate model.

†$p < .10$, *$p < .05$. **$p < .01$.

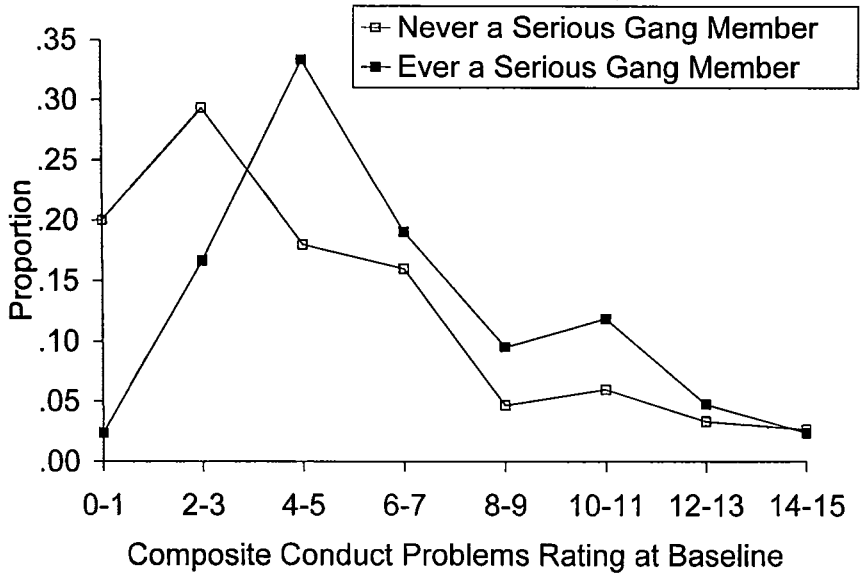

Fig. 2. Comparison of the distributions of composite ratings of conduct disorder behaviors based on parent, teacher, and youth reports (proportion with each composite score during Wave S) among African American boys who had or had not entered a serious gang by the end of the study in late adolescence. Boys who had already entered a serious gang by Wave S are excluded.

Table IV. Descriptive Statistics by First Serious Gang Entry: African American Boys Included in Multivariate Models

Boy's and peers' prior antisocial behavior	Wave prior to entry (or final wave[a])		All months at risk prior to entry (or final wave)	
	No serious gang entry ($n = 158$)[b]	First serious gang entry ($n = 25$)[c]	No serious gang entry ($n = 8{,}070$)[d]	First serious gang entry ($n = 545$)[e]
Composite rating of boys' CBCL CD behaviors				
CD behavior rating at baseline	3.86	5.60	3.51	5.43
	(3.24)	(3.13)	(2.89)	(3.19)
CD behavior ratings prior to entry	2.09	4.94	2.50	4.63
	(2.81)	(2.64)	(2.42)	(2.94)
CD behavior ratings: Change from baseline	−1.77	−0.65	−1.01	−0.79
	(3.56)	(3.30)	(3.03)	(2.84)
SRD types of crimes prior to entry				
Log of frequency of crimes against persons	0.56	1.17	0.41	0.92
	(0.96)	(1.50)	(0.85)	(1.21)
Log of frequency of crimes against property	0.28	0.77	0.34	0.88
	(0.69)	(1.15)	(0.74)	(1.15)
Log of frequency of selling drugs	0.31	0.35	0.16	0.25
	(1.02)	(1.01)	(0.77)	(0.91)
SRD hierarchical classification prior to entry				
% Street offender	20	26	13	22
% Serious offender	23	42	22	40
% Minor offender	11	18	16	16
% Nonoffender	46	14	49	22
Peer delinquency scale prior to entry				
School-related	2.56	3.66	2.42	3.47
	(2.11)	(2.44)	(1.79)	(2.01)
Covert	3.29	4.80	3.19	5.09
	(4.46)	(4.22)	(4.11)	(5.26)
Overt	1.79	2.27	1.40	2.13
	(2.49)	(2.54)	(1.97)	(2.28)
Drug use	2.74	2.36	1.97	2.02
	(2.69)	(2.69)	(2.26)	(2.52)
Family and Neighborhood Characteristics				
% Single parent household	60	56	61	59
Log of household income	9.87	9.75	9.84	9.65
	(0.76)	(0.72)	(0.75)	(0.73)
Log of poor parental supervision	2.58	2.56	2.52	2.54
	(0.22)	(0.17)	(0.23)	(0.21)
% Very high neighborhood crime	13	17	11	16

Note. Values are means or percentages. Standard deviations for continuous variables are in parentheses. CBCL = Child Behavior Checklist; CD = Conduct disorder.

[a]The value is for the final wave before serious gang entry for boys who joined serious gangs and for the last wave of the study for boys who did not join a serious gang, except for baseline CBCL CD behaviors which is the value at baseline.

[b]The sample sizes are lower for the peer delinquency scales: $n = 152$ for school-related, $n = 153$ for covert, $n = 156$ for overt, and $n = 155$ for drug use.

[c]The sample sizes are lower for the peer delinquency scales: $n = 24$ for school-related, $n = 25$ for covert, $n = 24$ for overt, and $n = 24$ for drug use.

[d]The number of months at risk are lower for the peer delinquency scales: $n = 7{,}816$ for school-related, $n = 7{,}750$ for covert, $n = 7{,}825$ for overt, and $n = 7{,}788$ for drug use.

[e]The number of months at risk are lower for the peer delinquency scales: $n = 519$ for school-related, $n = 530$ for covert, $n = 534$ for overt, and $n = 519$ for drug use.

covariates that were considered as possible predictors of gang entry. Consistent with the dynamic data-analytic models, means or proportions for the time-varying covariates are presented for the wave prior to serious gang entry (or for change from baseline to the wave prior to gang entry) for boys who entered a serious gang and for the last wave of the study for boys who did not enter a serious gang. In addition, averages are presented for the same variables across all months prior to serious gang entry for boys who entered a serious gang and for all months of the study for boys that did not enter a serious gang by the close of data collection.

Figure 3 illustrates the likelihood of serious gang entry for boys with varying combinations of CD behavior scores at baseline and changes in CD behavior scores since baseline. The hazard scores were predicted from the multivariate model including ratings of CD behaviors at baseline, changes in CD behaviors over time, and SRD crimes against persons. SRD crimes against persons scores were held constant at the mean score of 6, whereas CD behaviors at baseline and changes in CD behavior scores over time were systematically varied. The heightened hazard of gang entry among boys with higher ratings of CD behaviors at baseline is evident in the rising lines on the right hand side of Figure 3. Likewise, the increasing risk of gang entry when the boys' CD behavior ratings worsen over time is evident in each progressively steeper curve. There is a marked contrast between boys with higher CD behavior ratings at baseline whose CD behavior ratings either worsen or improve over time. A decline in rated CD behaviors over time apparently helps to protect boys with high initial risk of gang entry from entering a serious gang. For example, boys with an initial CD behavior score of 15 whose rated CD behaviors fell by 50% over time had a similar risk of serious gang entry as boys with a CD behavior score of 8 at baseline who showed a 50% increase in rated CD behaviors over time.

We expected that interactions between the boy's prior behavior and neighborhood crime rates would be related to the odds that a boy would enter a serious gang. Neither ratings of the boy's CD behaviors at baseline nor his self-reported prior crimes against persons interacted with neighborhood crime in predicting serious gang entry at the $p < .05$ level. When entry into any gang (not limited to serious gangs) was the dependent variable, however, the interaction of the boy's report of crimes against persons and living in a very high-crime neighborhood was significant, $HR = 1.61$, $p < .05$, reflecting higher rates of entry into any type of gang among boys who committed crimes against persons in the prior year and lived in very high-crime neighborhoods. This difference in findings could reflect differences between these types of gangs or may be the result of greater statistical power for analyses of the larger number of boys who entered any type of gang. Potential interactions among three additional variables

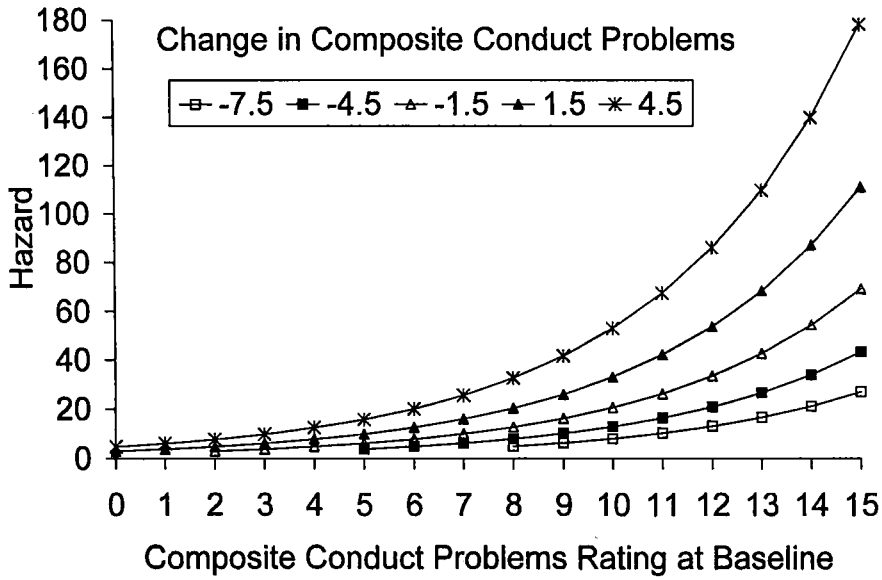

Fig. 3. Predicted hazard of serious gang entry among African American boys as a function of their composite ratings of conduct disorder behaviors by parents, teachers, and youths at baseline (Wave S) and changes in composite conduct disorder ratings over time.

were also examined (household structure, lax parental supervision, and the youth's baseline ratings of CD behaviors), but none were found.

In order to facilitate interpretation of findings on predictors of gang entry for African American boys, we compared the non-Hispanic White and African American boys who had not yet entered serious gangs by the time of the earliest data-collection point during which our covariates were available (Wave A). In bivariate analyses, African American boys were more likely to live in single-parent families (likelihood ratio $\chi^2(1, N =) = 27.29$, p < 0.001), to have lower family incomes ($t[] = -4.82$, $p < 0.001$), and to receive less monitoring from parents ($t[] = 3.54$, $p < 0.002$). In addition, African American boys reported having friends who engaged in more covert and overt delinquency than did White boys ($t[] = 3.05$, $p < 0.005$, and $t[] = 2.93$, $p < 0.005$, respectively). There were no significant differences between White and African American boys who had not entered a serious gang by Wave A on any measure of the boys' antisocial behavior (at Waves S and A) or residence in very high-crime neighborhoods, however.

Tests of Model Assumptions: Interactions with Age. The Cox model assumes that the effect of each covariate is constant across time (in this case, the youth's age). We examined this assumption by testing interactions with age, specifying age in a linear, logged, quadratic, and dummy variable fashion (see Blossfeld, Hamerle, & Mayer, 1989; Yamaguchi, 1991). This approach both tests for, and adjusts for, potential nonproportionality. Moreover, it allowed us to identify covariates that interact with age. The alternative method of allowing the baseline hazard to vary within strata also accounts for nonproportionality, but does not allow the identification of covariates that interact with age. Because of concerns about multicollinearity, we centered the continuous age variable and tested for interactions for each covariate individually. Interactions were first examined in bivariate associations and then controlling the variables which were included in our final multivariate model (Table 3).

No interactions with the linear term for age were found for the SRD measures, changes in CD behaviors over time, residing in a single-parent household, or living in a high-crime neighborhood. In contrast, the effects of CD behaviors at baseline, overt peer delinquency, family income, and parental supervision varied with age. As boys aged, the association between their baseline CD behaviors and serious gang entry diminished (interaction with linear age: $HR = 0.99$, $p < 0.03$). For example, the hazard ratio for CD behaviors when the boys were age 15 was $HR = 1.41$, $p < .001$, but diminished to $HR = 1.16$, $p < .06$, when the boys were age 17. A significant interaction with the quadratic term for age revealed that having friends who engaged in overt delinquency was significantly related to a higher risk of subsequent gang entry only in early adolescence (interaction with linear age: $HR = 0.97$, $p < 0.005$; interaction with age squared: $HR = 1.0007$, $p < .02$), controlling for the boys' antisocial behavior and family and neighborhood characteristics. The simple slopes indicate that overt peer delinquency increased the likelihood of subsequent serious gang entry when boys were age 14 ($HR = 1.98$, $p < .001$), but the hazard ratios were not significant at ages 15 ($HR = 1.18$, $p < .13$), 16 ($HR = 0.87$, p < 0.44), and 17 ($HR = 0.79$, $p < .23$). Family income and parental supervision also interacted with age ($HR = 0.90$, $p < 0.001$ and $HR = 0.97$, $p < 0.001$, respectively), controlling for the boys' antisocial behavior and other family and neighborhood characteristics listed in Table 3. Higher family income was related to lower risk of serious gang entry during late adolescence (e.g., $HR = 0.30$, $p < 0.03$ at age 17), but higher family income was associated with higher risk of serious gang entry during early adolescence (e.g., $HR = 3.26$, $p < 0.03$ at age 15). Similarly, less parental supervision was associated with a higher likelihood of serious gang entry during early adolescence (e.g., $HR = 1.58$, $p < 0.005$ at age 15), but less parental supervision was associated with lower risk of serious gang entry in late adolescence (e.g., $HR = 0.73$, $p < 0.02$ at age 17). Neither family income nor parental supervision were significantly associated with serious gang entry during mid-adolescence. These significant interactions with age were found using linear, logged, quadratic, and dummy variable specifications of age. Other predictors of serious gang entry (SRD crimes against persons and change in CD behaviors) remained significant when these interactions with age were controlled.

Tests of Model Assumptions: Approximation of Ties. The Cox model also assumes that no 2 boys entered a serious gang at the same age, referred to as "ties." We used the Peto–Breslow approximation to deal with the four ties that exist in our data. To test the sensitivity of our findings to this approach, we also applied an exact calculation using the conditional logistic regression likelihood function (Gould, 1997; Kalbfleisch & Prentice, 1980;). The findings were highly consistent using both approaches.

DISCUSSION

The present study confirms and extends key findings of previous longitudinal studies on predictors of serious gang membership. We used event history analysis to focus on first entry into a gang. This approach also eliminated concerns about carryover effects from previous gang

memberships and dealt with the problems of left truncation and right censoring of data that are inherent in longitudinal studies such as these. Nonetheless, the current findings are consistent with the earlier reports of Esbensen and Huizinga (1993), Hill *et al.*, (1996), and Thornberry (1998) that boys who engage in high rates of antisocial behavior are at high risk for subsequent gang membership.

Although ratings of CD behaviors in the first wave predicted subsequent serious gang entry, there was considerable overlap in the distributions of baseline ratings of CD behaviors of future serious gang members and boys who did not join a serious gang (Figure 2). Some boys with relatively low baseline CD behavior ratings entered serious gangs, and some boys with high CD behavior ratings had not entered serious gangs by the end of the study. This is explained partly by the interaction with age that suggests that the association between youths' initial CD behavior and the likelihood of entering a serious gang weakens as age increases. In addition, future serious gang members and nonmembers cannot be discriminated clearly based on their baseline CD behaviors because changes in CD behaviors after the first wave also predict future serious gang entry. In our data, the likelihood of serious gang entry was reduced for boys with high baseline CD behavior ratings if their behavior later improved, particularly if they did not commit crimes against persons after Wave S. Conversely, boys with low baseline CD behavior ratings whose behavior problems increased over time were at increased risk for serious gang entry, particularly if they later engaged in crimes against persons. Thus, we confirmed the finding of Esbensen and Huizinga (1993) that boys who display increasingly higher rates of antisocial behavior over the years prior to gang entry are at particularly high risk for gang entry.

The present findings support selection theories of gang entry because boys who were on a trajectory of worsening antisocial behavior were most likely to enter antisocial gangs. In this sense, gang entry might be thought of as the next developmental step in the escalating antisocial behavior of some boys. On the other hand, the present findings do not rule out the possibility that being a member of a gang also leads to further worsening of antisocial behavior through social processes (Thornberry *et al.*, 1993).

In bivariate analyses, the present study also confirmed previous findings that youths with delinquent friends are more likely to join gangs later (Curry & Spergel, 1992; Hill *et al.*, 1996; Thornberry, 1998; Winfree *et al.*, 1994). When the boys' own antisocial behavior and other factors were controlled, however, having aggressive friends was related to serious gang entry only during early adolescence. For most boys, association with delinquent peers prior to gang entry may reflect a general tendency for antisocial boys to associate with one another, either in or out of formal gangs. During early adolescence, however, friendships with aggressive peers may be a stepping stone to gang membership.

We did not confirm the finding of some previous studies that youths who join gangs are more likely to come from families with lower incomes (Hill *et al.*, 1996; Thornberry, 1998). We did find a significant interaction between family income and age, however, that suggests that higher family income tends to protect youths from gang entry during late adolescence, but higher family income was associated with higher risk of serious gang entry during early adolescence. We also did not confirm previous findings that gang members are more likely to come from single-parent families and families that provide lower levels of parental supervision (Thornberry, 1998; Winfree *et al.*, 1994). We did find a significant interaction between level of supervision and age, however, that indicated that less parental supervision increased the risk of serious gang entry during early adolescence, but less parental supervision was associated with lower risk of serious gang entry in late adolescence. Hopefully future studies will attempt to replicate these interactions to see if they are stable across data sets. We offer no explanation of the interaction between age and family income until more data are available. The interaction between parental supervision and age may indicate that boys with high levels of conduct problems who receive low levels of supervision in early adolescence are the first boys to join serious gangs. In contrast, the serious gang entry of boys who join gangs in later adolescence may have been delayed for several years by high levels of parental supervision.

The present study did not confirm the earlier finding that boys from high-crime neighborhoods are more likely to join gangs (e.g., Fagan, 1996). When we considered entry into any gang (not just serious gangs), however, the interaction between the boy's crimes against persons and neighborhood crime was significant. Again, it would be important to revisit this potential interaction in future studies with greater statistical power.

Although the difference in rates of gang membership between African American and non-Hispanic White youths is well-known (Howell, 1998), the difference in the survival functions for these two ethnic groups in the present study was striking. Clearly the field will not understand the process of gang entry until it understands the reasons for the marked ethnic difference in rates of gang entry. Unfortunately, we were unable to address this important issue because only 2 White boys in our sample entered serious gangs. Although conditions clearly favor gang membership among African American and

Hispanic–Latino youths at this time in the history of the United States, this has not always been the case. In the 1880s, for example, antisocial gangs in the United States were composed primarily of Irish youth (Haskins, 1974). This indicates that participation in gangs is not uniquely associated with African American or Hispanic–Latino cultures over time. It is essential that the current causes of ethnic differences in gang entry be addressed in future studies. These future studies should consider a broader range of risk factors and should oversample youths at risk for gang entry in multiple ethnic groups.

It is important to note some methodologic limitations of the present study. Relatively little is known about the psychometric properties of the self-report measure of gang membership used in this and other studies. Although self-reported gang membership has been validated by the greater amount of serious delinquency engaged in by gang members (Thornberry, 1998), other sources of validation are needed. A second limitation relates to the age of the youths at the start of this longitudinal study. Time-constant covariates should be measured prior to the commencement of the risk period for gang entry. Although ethnicity meets this temporal criterion, the CD behaviors rating was assessed in early adolescence (i.e., when the boys were generally 12 through 14 years old in Wave S). Bias can occur in coding time-constant covariates with values that they take on during the risk period if the duration at risk is related to the value of the covariate and the timing of measurement of the covariate occurs at different duration points across individuals. Because our measurement of CD behaviors occurred within approximately a 3-year span, such bias, if any, should be minimal. However, given that our survival analysis indicates that boys begin to enter gangs in late childhood, future studies that examine the predictors of gang entry throughout the full risk period are greatly needed. Also, because measures of the family and neighborhood variables were not available at Wave K, the longer time interval between parent-reported covariates and gang entry at the latest time point may have reduced our power to detect significant relationships somewhat. Finally, we considered only one aspect of the dynamics of gang membership here (entry into gangs). Future work should use event history models to analyze the predictors of the duration of gang membership and gang exiting and to analyze the predictors of gang reentry after a youth exits a first gang.

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